Amendments to the Claims

1. (currently amended)   A method comprising:

selecting a protected content sink device for display of a content stream, the selecting further comprising:

requesting, by the source application, a graphics driver to provide mode information for each content sink device attached to a graphics controller; and

selecting, as the protected content sink device, a content sink device implementing a content protection protocol ensuring unauthorized duplication of content displayed by the content sink device;

storing, by a content stream source application, an expected session identification code of a display content stream path from which content is received by the protected content sink device;

opening a secure connection between the content stream source application and a transmitter/codec unit attached to the protected content sink device;

transmitting the content stream to the transmitter/codec unit along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted;

requesting, by the content stream source application, the updated session identification code from the transmission/codec unit using a content protection protocol; and

comparing the updated session identification code received from the transmitter/codec unit against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device.

2. (original)   The method of claim 1, wherein prior to the selecting the protected content sink device, the method further comprises:

generating a series of session identification codes for each display content stream path supported by a graphics controller; and

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transmitting, by the graphic controller, a session identification code to a corresponding transmitter/codec unit from the series of session identification codes for each transmitter/code unit attached to the graphics controller.

3. (currently amended)   The method of claim ~~1~~ 2, wherein the generating the series of session identification codes further comprises:

generating an input connection state for a display content stream path indicating one or more input content streams to the graphics controller that follow the display content stream path;

generating a pipe identification code for the display content stream path indicating a pixel stream pipe traversed by the display content stream path;

generating an output connection state for the display content stream path indicating one or more output ports that the display content stream path traverses;

 generating a device identification code for the display content stream path uniquely identifying the graphics controller in which the display content stream path is contained, such that the session identification code for the display content stream path includes the input connection state, the output connection state, the pipe identification code and the device identification code;

transmitting the session identification code to each transmitter/codec unit attached to an output port from the one or more output ports indicated by the output connection state; and

repeating the generating, generating, generating, generating and transmitting steps for each display content stream path of each graphics controller.

4. (currently amended)   ~~The method of claim 3,~~

A method comprising:

generating a series of session identification codes for each display content stream path supported by a graphics controller, the generating comprising:

generating an input connection state for a display content stream path indicating one or more input content streams to the graphics controller that follow the display content stream path;

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generating a pipe identification code for the display content stream path indicating a pixel stream pipe traversed by the display content stream path;

generating an output connection state for the display content stream path indicating one or more output ports that the display content stream path traverses;

generating a device identification code for the display content stream path uniquely identifying the graphics controller in which the display content stream path is contained, such that the session identification code for the display content stream path includes the input connection state, the output connection state, the pipe identification code and the device identification code;

transmitting the session identification code to each transmitter/codec unit attached to an output port from the one or more output ports indicated by the output connection state; and

repeating the generating, generating, generating, generating and transmitting steps for each display content stream path of each graphics controller;

transmitting, by the graphic controller, a session identification code to a corresponding transmitter/codec unit from the series of session identification codes for each transmitter/code unit attached to the graphics controller;

selecting a protected content sink device for display of a content stream;

storing, by a content stream source application, an expected session identification code of a display content stream path from which content is received by the protected content sink device;

opening a secure connection between the content stream source application and a transmitter/codec unit attached to the protected content sink device;

transmitting the content stream to the transmitter/codec unit along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted;

requesting, by the content stream source application, the updated session identification code from the transmission/codec unit using a content protection protocol; and

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comparing the updated session identification code received from the transmitter/codec unit against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device,

wherein the generating the device identification code further comprises:

submitting a device code of a respective graphic controller to a linear feedback shift register; and

clocking the linear feedback shift register at a pixel rate of the content display stream to ensure the device code of the respective graphic controller is unique.

5. (original) The method of claim 1, wherein transmitting the session identification code to the transmission/codec unit further comprises:

receiving, by a graphic controller, the content stream from the content stream source application for display on the protected content sink device;

transmitting the updated session identification code to the transmission/codec unit during a vertical blanking interval in the content stream;

detecting, by the transmission/codec unit, a vertical blanking interval signal within the content stream;

latching, by the transmission/codec unit, the updated session identification code when the vertical blanking interval signal is detected; and

repeating the transmitting, detecting and latching steps for a duration of the content stream.

6. (original) The method of claim 1, further comprising:

performing the transmitting, requesting and comparing after a predetermined period of time; and

repeating the performing while the content stream is displayed on the protected content sink device.

7. (original) The method of claim 1, wherein comparing the session identification code further comprises:

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receiving a status word containing the updated session identification code from the transmitter/codec unit;

computing a digital signature across the status word to verify the authenticity of the status word; and

comparing the updated session identification code against the expected session identification code; and

when the updated session identification code is not equal to the expected session identification code, discontinuing transmission of the content stream.

8. (canceled)

9. (currently amended)   An apparatus, comprising:

one or more transmitter/codec units, each attached to a respective display content stream path from which content is received and each stores an expected session identification code identifying the respective display content stream path attached to the transmitter/codec unit;

a graphics controller transmits content to transmitter/codec units attached to a display content stream path along with an updated session identification code that is stored by the transmitter/code units and identifies the display content stream path on which the content stream was transmitted;

one or more content sink devices display content transmitted by the graphics controller; ~~and~~

a content source application selects a protected content sink device for display of a content stream, opens a secure connection with a transmitter/codec unit attached to the protected content sink device, requests the updated session identification code from the transmission/codec unit using a content protection protocol and compares the updated session identification code against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device; and

a graphics driver to provide mode information for each content sink device attached to the graphics controller in response to a request by the source application, such that the source application selects, as the protected content sink device, a content sink device implementing a

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content protection protocol ensuring unauthorized duplication of content displayed by the content sink device.

10. (original) The apparatus of claim 9, wherein the graphics controller includes:

an input selection device having one or more input content streams as inputs and one or more pixel stream pipes as outputs, receives the content stream and directs the content stream to a pixel stream pipe along a display content stream path identified by the updated session identification code using input selection information;

a blender that receives the content stream and mixes context planes within the content stream into a content pixel stream prior to being provided to the pixel stream pipe;

an output selection device having the one or more pixel stream pipes as inputs and one or more output ports as outputs, receives the content pixel stream from the pixel stream pipe and directs the content pixel stream to an output port along the display content stream path using output selection information; and

a sequencer transmits the updated session identification code to the transmission/codec unit during a vertical blanking interval in the content stream provided by the source application.

11. (currently amended) ~~The apparatus of claim 10~~
An apparatus, comprising:

one or more transmitter/codec units, each attached to a respective display content stream path from which content is received and each stores an expected session identification code identifying the respective display content stream path attached to the transmitter/codec unit;

a graphics controller transmits content to transmitter/codec units attached to a display content stream path along with an updated session identification code that is stored by the transmitter/code units and identifies the display content stream path on which the content stream was transmitted, the graphics controller including:

an input selection device having one or more input content streams as inputs and one or more pixel stream pipes as outputs, receives the content stream and directs the content stream to a pixel stream pipe along a display content

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stream path identified by the updated session identification code using input selection information;

a blender that receives the content stream and mixes context planes within the content stream into a content pixel stream prior to being provided to the pixel stream pipe;

an output selection device having the one or more pixel stream pipes as inputs and one or more output ports as outputs, receives the content pixel stream from the pixel stream pipe and directs the content pixel stream to an output port along the display content stream path using output selection information; and

a sequencer transmits the updated session identification code to the transmission/codec unit during a vertical blanking interval in the content stream provided by the source application;

one or more content sink devices display content transmitted by the graphics controller; and

a content source application selects a protected content sink device for display of a content stream, opens a secure connection with a transmitter/codec unit attached to the protected content sink device, requests the updated session identification code from the transmission/codec unit using a content protection protocol and compares the updated session identification code against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device.

wherein the graphics controller further comprises:

a linear feedback shift register that receives a device code of a respective graphics controller and is clocked at a pixel rate of the content display stream to ensure the device code of the respective graphics controller is unique, such that the updated session identification code for the display content stream path includes the input selection information, the output selection information, a pipe identification code identifying the pixel stream pipe traversed by the content stream and the unique device code.

12. (original) The apparatus of claim 9, further comprising:

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one or more digital visual output ports, such that each transmitter/codec unit is coupled to the graphics controller by a respective digital visual output port from the one or more digital visual output ports.

13. (canceled)

14. (currently amended)   An apparatus comprising:
one or more transmitter/codec units, each storing an expected session identification code identifying a display content stream path from which content is received and transmitting the content to a content sink device;

a graphics controller transmitting content to the one or more transmitter/codec units along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted;

a storage medium containing a plurality of programming instructions implements a content source application which, when executed, directs content source application to select a protected content sink device from a one or more content sink devices for display of a content stream, opens a secure connection with a transmitter/codec unit attached to the protected content sink device, requests the updated session identification code from the transmission/codec unit using a content protection protocol and compares the updated session identification code against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device; and

a processor to execute the plurality of program instructions; and

a graphics driver to provide mode information for each content sink device attached to the graphics controller in response to a request by the source application, such that the source application selects, as the protected content sink device, a content sink device implementing a content protection protocol ensuring unauthorized duplication of content displayed by the content sink device.

15. (original) The apparatus of claim 14, wherein the graphics controller includes:

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an input selection device having one or more input content streams as inputs and one or more pixel stream pipes as outputs, receives the content stream and directs the content stream to a pixel stream pipe along a display content stream path identified by the updated session identification code using input selection information;

a blender that receives the content stream and mixes context planes within the content stream into a content pixel stream prior to being provided to the pixel stream pipe;

an output selection device having the one or more pixel stream pipes as inputs and one or more output ports as outputs, receives the content pixel stream from the pixel stream pipe and directs the content pixel stream to an output port along the display content stream path using output selection information; and

a sequencer transmits the updated session identification code to the transmission/codec unit during a vertical blanking interval in the content stream provided by the source application.

16. (currently amended)   ~~The apparatus of claim 15~~

An apparatus comprising:

one or more transmitter/codec units, each storing an expected session identification code identifying a display content stream path from which content is received and transmitting the content to a content sink device;

a graphics controller transmitting content to the one or more transmitter/codec units along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted, the graphics controller including:

an input selection device having one or more input content streams as inputs and one or more pixel stream pipes as outputs, receives the content stream and directs the content stream to a pixel stream pipe along a display content stream path identified by the updated session identification code using input selection information;

a blender that receives the content stream and mixes context planes within the content stream into a content pixel stream prior to being provided to the pixel stream pipe;

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an output selection device having the one or more pixel stream pipes as inputs and one or more output ports as outputs, receives the content pixel stream from the pixel stream pipe and directs the content pixel stream to an output port along the display content stream path using output selection information; and

a sequencer transmits the updated session identification code to the transmission/codec unit during a vertical blanking interval in the content stream provided by the source application;

a storage medium containing a plurality of programming instructions implements a content source application which, when executed, directs content source application to select a protected content sink device from a one or more content sink devices for display of a content stream, opens a secure connection with a transmitter/codec unit attached to the protected content sink device, requests the updated session identification code from the transmission/codec unit using a content protection protocol and compares the updated session identification code against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device; and

a processor to execute the plurality of program instructions,

wherein the graphics controller further comprises:

a linear feedback shift register that receives a device code of a respective graphics controller and is clocked at a pixel rate of the content display stream to ensure the device code of the respective graphics controller is unique, such that the update session identification code for the display content stream path includes the input selection information, the output selection information, a pipe identification code identifying the pixel stream pipe traversed by the content stream and the unique device code.

17. (original) The apparatus of claim 14, further comprising:

one or more digital visual output ports, such that each transmitter/codec unit is coupled to the graphics controller by a respective digital visual output port from the one or more digital visual output ports.

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18. (canceled)

19. (currently amended)   An article of manufacture comprising:

a storage medium have stored thereon a plurality of programming instructions implementing a content source application which, when executed, direct the source application to select a protected content sink device for display of a content stream having an attached transmitter/codec unit containing an expected session identification code, open a secure connection with the transmitter/codec unit, transmit the content stream to the transmitter/codec unit along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted, and request the updated session identification code from the transmitter/codec unit and compare the updated session identification code received from the transmitter/codec unit against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device,

wherein the instruction for selecting the protected content sink device further includes instructions for:

requesting, by the source application, a graphics driver to provide mode information for each content sink device attached to a graphics controller; and

selecting, as the protected content sink device, a content sink device implementing a content protection protocol ensuring unauthorized duplication of content displayed by the content sink device.

20. (original) The article of manufacture of claim 19, wherein prior to the instruction to select the protected content sink device, the article of manufacture further includes instructions for:

generating a series of session identification codes for each display content stream path supported by a graphics controller; and

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transmitting, by the graphic controller, a session identification code to a corresponding transmitter/codec unit from the series of session identification codes for each transmitter/code unit attached to the graphics controller.

21. (currently amended)   ~~The article of manufacture of claim 20~~
An article of manufacture comprising:

a storage medium have stored thereon a plurality of programming instructions implementing a content source application which, when executed:

generate a series of session identification codes for each display content stream path supported by a graphics controller;

transmit, by the graphic controller, a session identification code to a corresponding transmitter/codec unit from the series of session identification codes for each transmitter/code unit attached to the graphics controller;

direct the source application to select a protected content sink device for display of a content stream having an attached transmitter/codec unit containing an expected session identification code;

open a secure connection with the transmitter/codec unit;

transmit the content stream to the transmitter/codec unit along with an updated session identification code that is stored by the transmitter/code unit and identifies a display content stream path on which the content stream was transmitted;

request the updated session identification code from the transmitter/codec unit; and

compare the updated session identification code received from the transmitter/codec unit against the expected session identification code to ensure that the content display stream has not been routed to an unprotected content sink device,

wherein the instruction for generating the series of session identification codes further includes instructions for:

generating an input connection state for a display content stream path indicating one or more input content streams to the graphics controller that follow the display content stream path;

generating a pipe identification code for the display content stream path indicating a graphic controller pipe traversed by the display content stream path;

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generating an output connection state for the display content stream path indicating one or more output ports that the display content stream path tranverses;

generating a device identification code for the display content stream path uniquely identifying the graphics controller in which the display content stream path is contained, such that the session identification code for the display content stream path includes the input connection state, the output connection state, the pipe identification code and the device identification code; and

repeating the generating, generating, generating and generating steps for each display content stream path of each graphics controller.

22. (original) The article of manufacture of claim 21, wherein the instruction for the generating the device identification code further includes instructions for:

submitting a device code of a respective graphic controller to a linear feedback shift register; and

clocking the linear feedback shift register at a pixel rate of the content display stream to ensure the device code of the respective graphic controller is unique.

23. (original) The article of manufacture of claim 19, wherein the instruction for transmitting the session identification code to the transmission/codec unit further includes instructions for:

receiving, by a graphic controller, the content stream from the content stream source application for display on the protected content sink device;

transmitting the session identification code to the transmission/codec unit during a vertical blanking interval in the content stream;

detecting, by the transmission/codec unit, a vertical blanking interval signal within the content display stream;

latching, by the transmission/codec unit, the session identification code when the vertical blanking interval signal is detected; and

repeating the transmitting, detecting and latching steps for a duration of the content stream.

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24. (original) The article of manufacture of claim 19, further including instructions for:

performing the transmitting, requesting and comparing steps after a predetermined period of time; and

repeating the performing step while the content stream is displayed on the protected content sink device.

25. (currently amended) The article of manufacture of claim 19, wherein the instruction for comparing the session identification code further includes instructions for:

receiving a status word containing the updated session identification code from the transmitter/codec unit;

computing a digital signature across the status word to verify the authenticity of the status word; and

comparing the updated session identification code against the expected session identification code; and

when the updated session identification code is not equal to the expected session identification code, discontinuing transmission of the content stream.

26. (canceled)

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